

**Summary Minutes of the United States Environmental Protection Agency (U.S. EPA)
Science Advisory Board (SAB) Meeting
September 21-22, 2010**

Meeting of the Chartered SAB and SAB Liaisons¹

Date and Time: September 21, 2010, 1:30 p.m. to 5:30 p.m.; September 22, 2010, 8:00 a.m. - 12:30 p.m. Eastern Time

Location: Doubletree Hotel, 1515 Rhode Island Avenue, NW, Washington DC

Purpose: To conduct one quality review, receive briefings on Agency and federal advisory committee science activities and continue the Science Advisory Board's discussions with EPA's Office of Research and Development (ORD) concerning ORD's strategic research directions.

SAB Members and Liaison Participants:

SAB Members

Dr. Deborah Swackhamer, Chair	Dr. Cecil Lue-Hing
Dr. David Allen (by phone)	Dr. Floyd Malveaux
Dr. Thomas Burke	Dr. Lee McMullen
Dr. Terry Daniel	Dr. Judith Meyer
Dr. George Daston (September 21, 2010 only)	Dr. Eileen Murphy (September 22, 2010 only)
Dr. Costel Denson	Dr. Duncan Patten
Dr. Otto Doering	Dr. Amanda Rodewald
Dr. David Dzombak	Dr. Jonathan Samet (September 21, 2010, by phone)
Dr. T. Taylor Eighmy	Dr. James Sanders
Dr. Elaine Faustman	Dr. Katherine Segerson (September 21, 2010 only)
Dr. Bernd Kahn	Dr. Barton Thompson
Dr. John Giesy	Dr. Paige Tolbert
Dr. Jeff Griffiths	Dr. Thomas Wallsten (September 21, 2010 in person, September 22, 2010 by phone)
Dr. James Hammitt (September 21, 2010, by phone)	Dr. Robert Watts
Dr. Bernd Kahn	
Dr. Nancy Kim	
Dr. Catherine Kling	
Dr. Kai Lee (by phone)	

Liaison Members

Dr. Steven Heeringa (Liaison with the FIFRA Scientific Advisory Panel, September 21, 2010, by phone)

Dr. James Johnson (Liaison with the National Advisory Council on Environmental Policy and Technology)

Dr. Martin Philbert (Liaison with the Board of Scientific Counselors, September 21, 2010, by telephone only)

Dr. Pamela Shubat (Liaison with the Children's Health Protection Advisory Committee)

EPA presenters and representatives

Dr. Kevin Teichman, Deputy Assistant Administrator for Science, EPA/ORD

Mr. Lek Kadelic, Deputy Assistant Administrator, EPA/ORD

Dr. Peter Preuss, Dr. Peter Preuss, Chief Innovation Officer, EPA/ORD

SAB Staff Office Participants

Dr. Angela Nugent, Designated Federal Officer (DFO)

Dr. Vanessa Vu, Director

Meeting Summary - September 21-22, 2010:

The meeting was announced in the Federal Register² and discussion at the meeting generally followed the issues and timing as presented in the agenda³. There were no oral public comments on September 22, 2010.

1. Convene the meeting

Dr. Angela Nugent, SAB DFO, convened the advisory meeting and welcomed the group. She noted that no written public comments had been received and that there had been no requests for oral public comment. Dr. Vanessa Vu, SAB Staff Office Director, expressed appreciation for members' preparations for the meeting and for involvement of SAB liaison members in person and via teleconference.

2. Purpose of meeting and review of the agenda

Dr. Deborah Swackhamer, the SAB Chair, welcomed chartered SAB members, liaison members, SAB Staff, and members of the public, who introduced themselves. Dr. Swackhamer noted that the agenda was planned in response to chartered SAB members' requests to learn more about the mission and activities of other science advisory committees with the goal of identifying possible areas of collaboration and cooperation. She also noted that ORD would provide an update on EPA's Gulf Oil Spill science and research activities and discuss future SAB advice on EPA strategic research directions.

3. Discussion and quality review of draft report from the SAB Scientific and Technological Achievement Awards (STAA) Committee

Dr. Taylor Eighmy, STAA Committee Chair, provided a brief introduction to the 2010 STAA committee activities the draft report submitted for quality review. He acknowledged the hard work of committee members and the DFO, Mr. Edward Hanlon. He summarized the major points of the draft report: 1) award recommendations for EPA-generated papers published in the peer review literature; 2) recommendations for improvements in the EPA nomination process; and 3) the STAA Committee's decision to decline reviewing nominations submitted in response to a pilot program initiated by the Director of the National Center for Environmental Research for Agency reports not published in the peer review literature. Dr. Eighmy explained that the purpose of the STAA awards was to encourage publication of EPA science in peer reviewed literature and that other mechanisms exist for recognizing high quality science in Agency reports.

Dr. Swackhamer recognized the lead reviewers, Drs. George Daston and Costel Denson. Both reviewers responded that EPA had satisfied the following four quality review questions:

1. whether the original charge questions to SAB Standing or Ad Hoc Committees were adequately addressed;
2. whether there are any technical errors or omissions in the report or issues that are inadequately dealt with in the Committee's report;
3. whether the Committee's report is clear and logical; and
4. whether the conclusions drawn or recommendations provided are supported by the body of the Committee's report.

One reviewer suggested that the Committee describe more clearly the alternate mechanisms available for EPA to recognize high quality science that has not been peer reviewed.

Other SAB members made the following comments or asked the following questions:

- It is notable that there was only one submission in the category for environmental policy and decision-making studies. Dr. Eighmy responded that, although the Agency nomination process is a good one, managers often do not always identify all the studies that may be eligible.
- If an Agency report receives peer review, shouldn't it receive recognition? Peer review journals may not want to publish long reports or inter-disciplinary reports? Should that science be penalized?
- Rather than having the STAA report identify some existing Agency mechanisms for recognizing science in Agency reports other than the STAA, it may be more appropriate for the STAA report just to recommend that EPA consider other options.

Dr. Swackhamer asked for a motion to dispose of the draft report. A motion was made and seconded to accept the report as written for transmittal to the Administrator. There was universal approval with one member, who had served on the STAA committee, abstaining.

4. Update on science advisory activities and discussion of possible SAB linkages

Dr. Deborah Swackhamer introduced liaison members. Each provided an update on an EPA federal advisory committee that advises EPA on science issues. Liaisons were asked to summarize the mission, recent accomplishments, and upcoming activities of their committee and discuss possible areas of collaboration and cooperation between their committee and the SAB.

Children's Health Protection Advisory Committee (CHPAC). Dr. Pamela Shubat, CHPAC Chair, provided a slide presentation⁴ summarizing the CHPAC mission, membership, recent accomplishments, and upcoming activities.

SAB members engaged Dr. Shubat in discussion. Dr. Shubat and SAB members discussed the following points:

- Children's health studies are becoming increasingly more subtle, examining effects by gender and age.
- As EPA develops new Integrated Risk Information System (IRIS) assessments and requests SAB review, questions will arise related to quantification methods and use of EPA's Children's Health Guidelines. Issues have already arisen in the review of EPA's draft dioxin and trichloroethylene report. As the SAB undertakes IRIS reviews, there will be "numerous opportunities for the SAB to work with CHPAC."
- The EPA Administrator formed the CHPAC in 1998 in response to a 1994 Presidential Order to consider children's health.
- The 1996 Food Quality Protection Act includes language requiring EPA to consider children as special cases for risk assessment.
- The Clean Air Act requires EPA to regulate to protect sensitive subpopulations; EPA considers children as one of these groups.
- The SAB has included CHPAC members in review panels, but the SAB has not formally conducted joint projects.
- Currently, there is no pediatrician on the chartered SAB; as membership changes, a pediatrician may be added.
- The CHPAC has a strong interest in socio-economic impacts on children's health but has not considered the value of the outdoors or ecosystem services in terms of psychological health.
- CHPAC focuses on environmental health issues within EPA's domain.
- The CHPAC has not conducted a self-evaluation.

FIFRA Scientific Advisory Panel. Dr. Steven Heeringa, FIFRA SAP Chair, provided a slide-presentation⁵ overview of his panel by telephone.

SAB members engaged Dr. Heeringa in discussion. Dr. Heeringa and SAB members made the following comments:

- The SAB primarily responds to requests for advice from EPA's Office of Pesticide Programs (OPP).

- SAB members showed interest in an SAP upcoming meeting (December 7, 2010) on the use of pesticides and climate change, planned to help OPP prepare to address these issues
- Dr. Heeringa highlighted areas of special common interest: 1) child and infant exposures; 2) physiologically based pharmacokinetic/pharmacodynamic (PBPK/PD) modeling; and 3) ecological effects of pesticides on streams and running water.
- The SAP does not typically provide advice on "minor uses" of a pesticide.
- The SAP seems to offer the SAB a flexible model of how a relatively small committee can be augmented by other experts for special purposes. It may offer a model for future SAB standing committees.
- SAP reports are formal presentations of the minutes of SAP meetings. SAP reports do not necessarily try to achieve consensus. Reports can show differences of views. Reports are not peer reviewed/quality reviewed. SAP reports are provided to the Agency within 90 days of the meeting
- EPA might consider ways to make the SAP Web site more accessible to the public.
- The SAP does not interact directly with OPP stakeholder committees, such as the Pesticide Program Dialogue Committee.
- The SAP receives input from industry at public meetings. Industry provides comment, data, and technical presentations.

National Advisory Committee on Environmental Policy and Technology (NACEPT). Dr. James Johnson, NACEPT Chair provided a slide-presentation⁶ overview of his committee. Dr. SAB members engaged Dr. Johnson in discussion. Dr. Johnson and SAB members made the following comments:

- NACEPT's distinctive niche is the intersection of policy, science, and technology. NACEPT is a stakeholder advisory committee. Its membership is more diverse than the SAB
- SAB members noted that NACEPT will review EPA's draft FY 2011-FY2015 Strategic Plan
- Topics generally come from the Administrator and senior staff. Dr. Johnson is trying to develop a more interactive approach to identifying topics, "a two-way street."
- One set of parallel NACEPT and SAB activities involved review of EPA's *Report on the Environment*. NACEPT reviewed the summary, layman version; the SAB reviewed the technical document.
- One possible new area for NACEPT is international competitiveness and the contributions of computational toxicology, given regulations and trends in the European Union.
- NACEPT currently has two active work groups.

Clean Air Scientific Advisory Committee (CASAC). Dr. Jonathan Samet, CASAC Chair, by telephone provided a slide presentation⁷ overview of CASAC for SAB members.

SAB members engaged Dr. Samet in discussion after his presentation. Dr. Samet and SAB members made the following comments:

- Dr. Samet's description of how EPA's Integrated Science Assessments (ISAs) characterize causality determinations and use tables to classify strength of evidence is helpful for SAB review of other chemical assessments that address combined effects and cumulative effects
- Professional judgment must be used to weight different kinds of data, including biological plausibility. Particulate Matter (PM) is a good example. In 1997, CASAC was more tentative about PM's effects because of concern about biological plausibility. Now CASAC and EPA agree that the basis for biological plausibility is stronger.
 - If the classification of a chemical's effect is "suggestive," EPA looks for more evidence. If a chemical is classified as "suggestive," but there may be high public health impacts, the Clean Air Act allows using that evidence to help set the National Ambient Air Quality Standards (NAAQS). There are no bright lines.
 - EPA itself conducts the NAAQS review and CASAC provides guidance on the appropriateness of classification. Different panels could possibly, over time, respond differently to evidence that EPA presents. In any case, EPA's basis of classification needs to be clear. Over time, EPA needs to set precedents that will be useful, based on mutual calibration of CASAC and Agency staff. Classifying chemicals and clearly communicating the rationale for classification is an important first step.
- CASAC has a large workload, reviewing the six NAAQS pollutants and constantly re-evaluating them.
- SAB and CASAC might possibly collaborate on identification of future research needs associated with the NAAQS review. The chemical-by-chemical approach mandated by the Clean Air Act has led to improvements in air quality as levels of individual pollutants have declined. It may be appropriate now to address concerns about exposures to multiple pollutants and consider how research can support a new approach.

Advisory Council on Clean Air Compliance Analysis. Dr. James Hammitt, Council Chair, by telephone provided a slide presentation⁸ overview of the Council for SAB members.

SAB members engaged Dr. Hammitt in discussion after his presentation. Dr. Hammitt and SAB members made the following comments:

- The most significant controversy associated with EPA's "812 Study" (the major assessment of the costs and benefits of implementing the Clean Air Act reviewed by the Council) concerns the monetary value of reducing mortality risks, especially among older people. This topic dominates discussion. There is less debate over possible underestimation of costs. An SAB member noted that EPA's Office of Policy has asked the SAB Environmental Economics Advisory Committee to provide advice on overestimation of costs in Fiscal Year 2012.
- The 812 study seeks to characterize uncertainty as completely as possible, but the scope of the study makes uncertainty characterization "hard to do in any consistent way." At the end of each chapter EPA provides a table identifying factors that are uncertain and

classifying them as major and minor (major uncertainties are those likely to have effect of at least 5% on the total benefit or cost estimate). EPA conducted sophisticated Monte Carlo estimates of some factors. For particulate matter, EPA made use of an expert elicitation study that examined two primary epidemiology cohorts. However, other important uncertainties were held constant. For example, EPA makes a major assumption about the baseline for its analysis. It assumes that if there were no Clean Air Act, there would be no change in regulation, and the size of the U.S. population would be held constant with and without the law. It also assumes constant meteorology and no variability associated with climate change.

- The Council has considered recommending that EPA compare its predictive assessment in the first prospective 812 study, which addressed the period 1990-2010 against actual data on emissions, benefits, and costs.
- The Council does not undertake any original analysis; it reviews work products prepared by EPA's Office of Air and Radiation.
- The SAB Environmental Economics Advisory Committee does not review EPA draft benefit - cost assessments; it reviews economic methodologies.
- In response to a question, the Council Chair suggested that the biggest gaps in benefits involve materials damage and ecosystem functioning and services. Ecosystem valuation is especially difficult because scientists believe it is difficult to predict effects on ecosystems; effects are often location-specific; economists don't have good ways to estimate values; and it is not clear whether economic valuation is as appropriate for ecological valuation as it is for human health. He noted that the SAB's report on *Valuing the Protection of Ecological Systems and Services* (EPA-SAB-09-012) arose "out of an impasse in the Council review of the 2002 812 study analytical plan." Despite that SAB report, the second prospective study only involves a few small case studies of Adirondacks as novel elements of its ecological analysis
- The 812 report may not be continued because the report is no longer mandated for Congress and EPA is considering whether the report is an appropriate use of resources.

The SAB recessed at 5:00 p.m.

Wednesday, September 22, 2010

4. Continued Update on science advisory activities and discussion of possible SAB linkages

ORD Board of Scientific Counselors (BOSC). Dr. Martin Philbert, BOSC Member, provided a slide-presentation⁹ overview of his committee by telephone.

SAB members engaged Dr. Philbert in discussion. Dr. Philbert and SAB members made the following comments:

- The BOSC typically conducts program reviews that address a particular lab or center and have not focused on integration across these organizations in the past. The BOSC can focus on this question in upcoming activities.
- *De novo* work:

- BOSC has completed one *de novo* work, a report from a Decision Analysis Workshop, jointly held by ORD and the BOSC on March 30–April 1, 2009. The BOSC sent a workshop report to the ORD Assistant Administrator in May 2010.
- The BOSC is now gathering some exploratory information from ORD programs on bioinformatics and data mining
- BOSC and SAB might collaborate on identifying emerging issues. The SAB and BOSC might attempt one well-defined strategic joint project per year and undertake one effort as a pilot.
- As ORD is reorienting its approach to research in light of the ORD Deputy Administrator's March 2010 "Path Forward" memo, the BOSC may undertake some strategic planning activities. Although, in general, the SAB focuses on "what science should be done," and the BOSC focuses on "how it should be done," these efforts may be especially inter-related in the upcoming fiscal years.
- The BOSC and SAB chairs should meet periodically and exchange information and ideas
- The SAB DFO should provide SAB members with the BOSC's report on decision making.
- The BOSC has included mention of social sciences in discussions with ORD but "has not pressed it" in light of constrained resources. One area of collaboration between the SAB and the BOSC might include practical identification of scope of analysis for ORD without strain on resources.
- The BOSC has not recently been evaluated and could benefit from evaluation. A bibliometric analysis is inadequate; the key question is the impact of ORD's research on changing policy
- Much of ORD's research is buried in EPA's Web site. ORD should think carefully about how it advertises its web content.
- Some members of the BOSC have expertise in evaluation; they may be useful both to the SAB and the BOSC

Possible future collaboration/coordination with EPA federal advisory committees - discussion

SAB members discussed collaboration and improved communication between the SAB and other EPA federal advisory committees highlighted at the meeting. Several members spoke about possible interactions with the BOSC first. Members made the following suggestions:

- The SAB and the BOSC might schedule meetings during the same week so that members can overlap for an afternoon.
- ORD might include SAB members in BOSC program review.

SAB members discussed mechanisms for collaboration and improved communication with other committees more generally.

- Exploring opportunities to appoint members from other advisory committees to SAB panels and committees.
- Exploring opportunities for SAB members to serve on other advisory committees as liaisons.

- Finding opportunities to collaborate across science advisory committees on strategic planning and future trend analysis
- Involving other advisory committees in "emerging issue" workshop planning. The list of "emerging issues" identified collectively by the different advisory committees would be a useful product in itself.
- Finding ways to ensure separate advisory committees "aren't stove piped" and "don't work at cross purposes."
- Looking for opportunities for the chairs of science advisory committees to meet and exchange ideas, perhaps a yearly event.
- Finding ways to inform SAB members about reports coming from other advisory committees; possibly expanding the monthly email update being developed from the SAB Staff.
- Looking for opportunities for collaboration and overlap between the Council and the SAB Environmental Economic Advisory Committee.
- Seeking ways to work with other EPA advisory committees on strategic issues of interest to the SAB, such as opportunities to transcend EPA's traditional chemical-by-chemical approaches.
- Keeping in mind that a variety of perspectives from EPA's different committees can be helpful. FACA advice need not all be consistent.

5. Update on Gulf Oil Spill Science and Research Planning Activities

ORD's Deputy Assistant Administrator Mr. Lek Kadeli, provided the SAB with a slide presentation.¹⁰ SAB then engaged Mr. Kadeli in discussion, where the following points were made:

- In reaching out to external scientists for peer review and other assistance related to the 2010 Gulf Oil Spill, ORD took special care to identify potential conflict of interests. It did find that many scientists with needed expertise had potential conflicts or were "oversubscribed," working with other organizations.
- There may be a need for revising the science underlying risk-based criteria and dermal models for exposure to polyaromatic hydrocarbons (PAHs). These criteria and models are important for state-level decisions about beach closings. Because models have problems, states have based decisions on detection levels, when much data exist on direct dermal PAH exposures.
- EPA needs tools for assessing cancer risks from intermittent exposures to toxic chemicals. Currently tools rely on long-term exposures.
- EPA may see an increase in funding for research relating to oil spills. This research category has been static, approximately \$700,000, for the last 10 years.
- EPA should invest in high quality risk communication research so that when beaches are safe and seafood is safe to eat, communities are better informed.
- SAB members noted that ORD's slides did not discuss research on risk perception and risk communication. They noted that, if there are limited resources to do both research on dispersants and risk communication, it would be appropriate to do less research on dispersants in order to undertake serious research on risk communication.

- EPA will undertake a "lessons learned"/evaluation exercise after the Gulf Oil Spill crisis is over.
- Mr. Kadeli did not know whether federal scientists will be able to compete for British Petroleum's research funds, being managed by a consortium.
- An SAB member emphasized the importance of ecological monitoring "on an ongoing basis and in emergencies." He noted that ORD science depends on monitoring information.
- Another SAB member recommended that EPA should use its limited resources wisely. He noted that ORD ecologists working on ecosystem services could take a leadership role in studying how Gulf marshes respond and how changes in marsh land influence the coastal ecosystem's ability to provide ecosystem services

6. Future SAB advice on EPA Strategic Research Directions

ORD's Deputy Assistant Administrator for Science, Dr. Kevin Teichman, and ORD's Chief Innovation Officer, Dr. Peter Preuss, provided a brief slide presentation¹¹ before they discussed the topic of future SAB advice on EPA strategic research directions with chartered SAB members. Dr. Teichman noted that the SAB mandate is broad and covers all EPA science, not solely ORD research and that the SAB advises the EPA Administrator. The BOSC, in contrast, focuses on ORD research and advises the ORD Assistant Administrator. He encouraged the SAB to keep in mind that EPA's overall scientific workforce totals 6,000 full time employees. ORD only has a workforce of 1,900; only two-thirds of that total ORD staff are scientists and engineers. He characterized the SAB's role as advising ORD to "do the right science" and the BOSC as "doing science right." He noted that ORD has been "developing new ways to do that right science" as it has focused on implementation of the "Path Forward" memo from the ORD Assistant Administrator, Dr. Paul Anastas. He asked the SAB to focus on materials needed to prepare for the ORD budget review for Fiscal Year 2012 and materials needed to provide additional advice on strategic directions.

Dr. Peter Preuss supplemented information in his slide presentation by noting that his new position as information officer involved: 1) encouraging divergent thinking, i.e., new ways to imagine environmental protection and related science *de novo*; and 2) identification of barriers to innovation and ways to eliminate barriers (e.g., new on-line tools, internet-based challenges to get new ideas from the public). He is working directly with a very small team on this initiative.

SAB members followed the presentation with a discussion with Drs. Teichman and Preuss. As Chief Innovation Officer, Dr. Preuss saw change happening as a result of his team possibly through development of "some very different research programs in ORD." For example, much of the U.S. water system was developed historically to fight fires. If there was an opportunity for a different water system, that might lead to new environmental protection solutions. Since ORD innovation efforts are very new, he noted that it was difficult to describe future changes in detail. He expressed the hope that new research directions will not just bring incremental change, but instead change that will allow EPA to "leapfrog" ahead and "not just worry about the next better band aid."

Drs. Teichman and Preuss envisioned research planning working in the following way. National Program Directors will develop proposals and have conversations and deliberations with directors of labs and centers. The conversations will be "fused with greater attention to innovation." Divergent thinking will enable some new research activities to be developed. New legislative developments, such as reform of the Toxic Substances Control Act, also may allow for innovation, such as new high throughput screening. There may be opportunities for development of "next generation risk assessment." There may be opportunities for multi-pollutant risk assessment to meet the needs of the water and air programs.

Dr. Teichman mentioned that ORD also was seeking more systems thinking in research design, so that chemical risk assessment and risk management would look at impacts in different media and consider inter-relationships of topics, e.g., like the interactions of climate change and ozone. He noted that Dr. Joseph Fiksel, Executive Director of the Center for Resilience at The Ohio State University, would be advising ORD on systems-based approaches to research.

ORD is looking for ways to retain its targeted research while also providing mechanisms and possible resources to develop "more transformative research." ORD is considering an internal grants program to focus on such transformative research and ways to structure promotion reviews to encourage it. Dr. Teichman described the decision made by Dr. Paul Anastas last spring to release ORD Laboratory and Center Directors from day-to-day duties to focus on implementation of the Path Forward memo. As a result, Laboratory and Center Directors have become invested in the process. He suggested that the chartered SAB hold its next meeting in Research Triangle Park or Cincinnati, so that ORD Laboratory and Center Directors and their staffs can fully participate.

An SAB member noted that EPA is at a transitional point because of climate change and sustainability and asked how ORD planned to make its innovation transformative, since it will have implications for the regulated community. He asked whether ORD will systematically try to "figure out implications" for partners and the regulated community. Dr. Preuss responded that ORD will be working to understand more fully all the constraints on ORD's science. ORD will explore new internet-based technologies that will help ORD seek input from outside publics in ways that will help ORD overcome internal barriers and tap new approaches. He also mentioned the importance of building a strong community of scientists within EPA. An SAB member recommended that ORD undertake a systematic assessment of expectations and anxieties on the part of the regulated community and the general public related to ORD's innovations and plan to incorporate input those groups into ORD's innovation process. Dr. Teichman noted that ORD will be seeking input from a broad group in problem identification and problem formulation and involve a much larger group than ORD has traditionally involved.

In response to Dr. Preuss's description of ORD's plans to initiate new internal innovation grants, an SAB member asked whether the grants program will be designed not just to encourage certain innovative research topics, but also to transform the nature of research itself. He asked whether ORD is considering giving priority to people doing inter-disciplinary work, priorities to research by groups vs. research by individuals, or priorities to new groups of collaborators. ORD responded that the first round of grants will have few limits and would simply have the goal to encourage people to think differently. ORD is considering soliciting internal grants without any

other signature than scientists submitting grants, with no manager's signature involved. For future years, ORD would then consider ways to structure grants differently to ensure that grants reinforce divergent thinking and ORD goals. ORD is considering how the structure of grants might possibly bias research for future years (especially whether a relevancy review might bias against new ideas and whether lack of relevancy review might bias against today's needs) and will give the structure of future grants more thought.

The SAB STAA committee chair noted that integrated transdisciplinary research is neither a paper category nor criterion for the STAA award. He offered the assistance of the STAA committee if EPA would like to develop an aspect of the STAA program to recognize such research. ORD welcomed this offer.

SAB members responded to ORD's request for identification of the SAB's information needs to help it better review ORD Fiscal Year 2012 proposed budget and better engage in dialogue on future research directions

- ORD should provide information on its new innovation initiative in the context of EPA's Government Performance and Results Act Structure and Framework. One SAB member asked ORD to identify large-scale goals, objectives, and subobjectives and show dollar amounts that illustrate ORD's priorities. He asked for budget information that "drills down" into programs in a way that shows the direct mapping of dollars to targets, with graphical enhancement, if possible. He noted that SAB would welcome fairly detailed information at the program level. Other SAB members agreed that this level of detail was needed.
- SAB members asked ORD to provide the latest multi-year plans as part of the budget review.
- Another SAB member asked for clear information about resources devoted to integrated transdisciplinary research and resources devoted for cross-program activities as a cross-cut/break-out of the multi-year plan and other budget information.
- SAB members asked to see resources devoted to socio-economic research, risk communication, and ecosystem services.
- SAB members asked for information about "present or anticipated examples of integrated transdisciplinary research" to help them understand how ORD is approaching such research. One member also asked for examples of research projects that potentially could be integrated transdisciplinary research but are still in the silo and an explanation of why ORD is not pursuing cross disciplinary efforts for these activities.

The Chair of the chartered SAB summarized the discussion by noting several possible areas for focused interactions between ORD and SAB on future strategic research directions:

- best practices for interdisciplinary work
- best practices for incentive grants; SAB could examine how the grants were structured and reviewed and the design for future grants
- integrated transdisciplinary pilots; the SAB could engage in conversation to discuss future pilots and provide advice on current plans for pilots
- identification of barriers to and constraints on innovation; the SAB could help identify barriers and constraints and offer ideas for overcoming them

- Identification of opportunities for innovation; the SAB could help identify research opportunities likely to make a significant difference to protecting public health and the environment.

She noted that there may be other opportunities for "intersections" with ORD and the BOSC. Dr. Teichman acknowledged these points and suggested that future discussion in these areas should involve the BOSC and possibly other federal advisory committees. He suggested that a major meeting on this topic would need to occur after the FY 2012 President's Budget is released. He also noted that ORD would like interactions with the SAB to be interactive and not follow a strict peer review model. He suggested that it may be appropriate to plan a major meeting next summer, although there could be an opportunity for some interim presentation of information in the interim, as ORD research plans mature.

The meeting concluded with SAB thanks to ORD for the presentation and discussion and ORD thanks to the SAB for its thoughtful comments.

The Designated Federal Officer adjourned the meeting at 12:30 p.m.

Respectfully Submitted:
/s/

Dr. Angela Nugent
SAB DFO

Certified as True:
/s/

Dr. Deborah L. Swackhamer
SAB Chair

NOTE AND DISCLAIMER: The minutes of this public meeting reflect diverse ideas and suggestions offered by committee members during the course of deliberations within the meeting. Such ideas, suggestions, and deliberations do not necessarily reflect definitive consensus advice from the panel members. The reader is cautioned to not rely on the minutes represent final, approved, consensus advice and recommendations offered to the Agency. Such advice and recommendations may be found in the final advisories, commentaries, letters, or reports prepared and transmitted to the EPA Administrator following the public meetings.

Materials Cited

The following meeting materials are available on the SAB Web site,
<http://www.epa.gov/sab>, at the [page for the September 21-22, 2010 SAB meeting](http://www.epa.gov/sab):
<http://yosemite.epa.gov/sab/sabproduct.nsf/a84bfee16cc358ad85256ccd006b0b4b/b3755a730ce1b2a3852576ab00740989!OpenDocument&Date=2010-09-21>

¹ Roster, Chartered SAB Members and Liaisons, September 21-22, 2010

² Federal Register Notice Announcing the Meeting

³ Agenda

⁴ Presentation by Dr. Pamela Shubat, CHPAC Chair

⁵ Presentation by Dr. Steven Heeringa, EPA FIFRA SAP Chair

⁶ Presentation by Dr. James Johnson, NACEPT Chair

⁷ Presentation by Dr. Jonathan Samet, CASAC Chair

⁸ Presentation by Dr. Jonathan Samet, CASAC Chair

⁹ Presentation by Dr. Martin Philbert, BOSC Member

¹⁰ ORD presentation, Gulf Oil Spill Science and Research Planning Activities

¹¹ Presentation on "Future ORD-SAB Engagements on Strategic Directions" by Drs. Kevin Teichman and Peter Preuss, EPA/ORD